

What we claim is:

1. A sterile malleable bone composition for application to a bone defect site to promote new bone growth at the site comprising demineralized osteoinductive and osteoconductive bone particles in an aqueous carrier solution, the bone particles being added to a viscous carrier at a concentration ranging from 5-50%(w/w), the carrier comprising a hydrogel component of sodium hyaluronate or its derivatives in a phosphate buffered aqueous solution, said hydrogel ranging from about 1.0% to about 5.0% by weight of the aqueous carrier solution and cellular material taken from a group consisting of living cells, cell elements such as red blood cells, white blood cells, platelets, blood plasma, pluripotential cells, osteoblasts, osteoclasts, and fibroblasts, epithelial cells, and endothelial cells present at a concentration of 10^5 to 10^8 per cc of the carrier, said hydrogel component having a high molecular weight ranging from about six hundred sixty thousand to three million Daltons with a stable viscosity at a temperature ranging from about 22° C to about 37° C and said composition having a pH ranging from about 6.8 to about 7.4
2. A sterile formable bone composition as claimed in claim 1 wherein said bone particles are allograft cortical bone ranging from 100 microns to 850 microns in size at a concentration ranging from 20% to 35% by weight of the composition.
3. A sterile formable bone composition as claimed in claim 1 including growth factor additive added to said composition, said growth factor comprising one or more of a group consisting of transforming growth factor (TGF-beta), insulin growth factor (IGF-1); platlet derived growth factor (PDGF), vascular endothelial growth factor (VEGF), fibroblast growth factor (FGF) (numbers 1-23), osteopontin, growth hormones such as somatotropin cellular attractants and attachment agents.
4. A sterile formable bone composition as claimed in claim 1 including growth factor additive added to said composition comprising one or more of a group consisting of fibroblast growth factor (FGF) (numbers 1-23) in the amount of 2-4 milligrams in 10cc of carrier solution.

5. A sterile formable bone composition as claimed in claim 1 wherein said composition includes an additive collagen and insoluble collagen derivatives.

6. A sterile formable bone composition as claimed in claim 1 wherein said composition includes the addition of calcium hydroxyapatite at a concentration of 20-35% measured as calcium.

7. A sterile formable bone composition as claimed in claim 1 wherein said bone particles are taken from a group consisting of allograft bone, cortical allograft bone, corticallancellous bone, cancellous bone, autologous bone and xenograft bone.

8. A formable bone composition as claimed in claim 1 wherein said composition includes bone chips taken from a group consisting of partially demineralized chips and non demineralized chips having a particle size ranging from 0.1 mm to 1.0 cm which are added to said viscous carrier at a concentration of about 5% to about 25%.

9. A sterile formable bone composition for application to a bone defect site to promote new bone growth at the site comprising a demineralized osteoinductive and osteoconductive bone particles in an aqueous carrier solution, the bone particles being added to a viscous carrier at a concentration ranging from 5-50% (w/w), the carrier comprising a hydrogel component of sodium hyaluronate or its derivatives in a phosphate buffered aqueous solution, said hydrogel ranging from about 1.0% to about 5.0% by weight of the aqueous carrier solution and said hydrogel component having a high molecular weight ranging from about six hundred sixty thousand to three million Daltons with a stable viscosity at a temperature ranging from about 22° C to about 37° C, said composition having a pH ranging from about 6.8 to about 7.4 and a growth factor additive added to said composition, said growth factor comprising one or more of a group consisting of transforming growth factor (TGF-beta), insulin growth factor (IGF-1); platelet derived growth factor (PDGF), vascular endothelial growth factor (VEGF), fibroblast growth factor (FGF) (numbers 1-23), osteopontin, growth hormones such as somatotropin cellular attractants and attachment agents.

10. A formable bone composition as claimed in claim 9 including a cellular material taken from a group consisting of living cells and cell elements such as chondrocytes, red blood cells, white blood cells, platelets, blood plasma, bone marrow cells, mesenchymal stem cells, pluripotent cells, osteoblasts, osteoclasts, and fibroblasts, epithelial cells, and endothelial cells. These cells or cell elements or combinations of the same are present at a concentration of 10^5 to 10^8 per cc of the carrier

11. A sterile formable bone composition as claimed in claim 9 wherein said bone particles are allograft cortical bone ranging from 100 microns to 850 microns in size at a concentration ranging from 20% to 35% by weight of the composition.

12. A sterile formable bone composition as claimed in claim 9 wherein said composition includes an additive collagen and insoluble collagen derivatives.

13. A sterile formable bone composition as claimed in claim 9 wherein said composition includes the addition of calcium hydroxyapatite at a concentration of 20-35% measured as calcium.

14. A sterile formable bone composition as claimed in claim 9 wherein said bone particles are taken from a group consisting of allograft bone, cortical allograft bone, corticallancellous bone, cancellous bone, autologous bone and xenograft bone

15. A formable bone composition as claimed in claim 9 wherein said composition includes bone chips taken from a group consisting of partially demineralized chips and fully mineralized chips having a particle size ranging from 0.1mm to 1.0cm which are added to said viscous carrier at a concentration of about 5% to about 25%.

16. A sterile formable bone composition for application to a bone defect site to promote new bone growth at the site comprising a demineralized osteoinductive and osteoconductive bone particles in an aqueous carrier solution, the bone particles being added

to a viscous carrier at a concentration ranging from 5-50%(w/w), the carrier comprising a hydrogel taken from a group consisting of Dextran, carboxymethylcellulose (CMC) and hydroxypropylmethylcellulose (HPMC) in a phosphate buffered aqueous solution, said hydrogel ranging from about 15% to about 30% by weight of the aqueous carrier solution and said hydrogel component having a molecular weight ranging from twenty thousand to forty thousand Daltons with a stable viscosity at a temperature ranging from about 22° C to about 37°C and said composition having a pH ranging from about 6.8 to about 7.4 and a growth factor additive added to said composition, said growth factor comprising one or more of a group consisting of transforming growth factor (TGF-beta), insulin growth factor (IGF-1); platelet derived growth factor (PDGF), vascular endothelial growth factor (VEGF), fibroblast growth factor (FGF) (numbers 1-23), osteopontin, growth hormones such as somatotropin cellular attractants and attachment agents.

17. A sterile formable bone composition as claimed in claim 16 including a cellular material additive taken from a group consisting of living cells and cell elements such as chondrocytes, red blood cells, white blood cells, platelets, blood plasma, bone marrow cells, mesenchymal stem cells, pluripotential cells, osteoblasts, osteoclasts, and fibroblasts, epithelial cells, and endothelial cells. These cells or cell elements or combinations of the same are present at a concentration of 10^5 to 10^8 per cc of the carrier

18. A sterile formable bone composition for application to a bone defect site to promote new bone growth at the site comprising demineralized osteoinductive and osteoconductive bone particles an aqueous carrier solution, the bone particles being added to a viscous carrier at a concentration ranging from 5-50%(w/w), the carrier comprising a hydrogel taken from a group consisting of Dextran, carboxymethylcellulose (CMC) and hydroxypropylmethylcellulose (HPMC) in a phosphate buffered aqueous solution, said hydrogel ranging from about 15% to about 30% by weight of the aqueous carrier solution and cellular material taken from a group consisting of living cells, cell elements such as red blood cells, white blood cells, platelets, blood plasma, pluripotential cells, osteoblasts, osteoclasts, and fibroblasts, epithelial cells, and endothelial cells present at a concentration of 10^5 to 10^8 per cc

of the carrier, said hydrogel component having a molecular weight ranging twenty thousand to forty thousand Daltons with a stable viscosity and said composition having a pH ranging from about 6.8 to about 7.4

19. A sterile formable bone composition as claimed in claim 18 including growth factor additive added to said composition, said growth factor comprising one or more of a group consisting of transforming growth factor (TGF-beta), insulin growth factor (IGF-1); platlet derived growth factor (PDGF), vascular endothelial growth factor (VEGF), fibroblast growth factor (FGF) (numbers 1-23), osteopontin, growth hormones such as somatotropin cellular attractants and attachment agents.

20. A sterile formable bone composition as claimed in claim 18 including growth factor additive added to said composition comprising one or more of a group consisting of fibroblast growth factor (FGF) (numbers 1-23) in the amount of 2-4 milligrams in 10cc of carrier solution.

21. A sterile formable bone composition for application to a bone defect site to promote new bone growth at the site comprising a demineralized osteoinductive and osteoconductive bone particles in an aqueous carrier solution, the bone particles being added to a viscous carrier at a concentration ranging from 5-50%(w/w), the carrier comprising a hydrogel taken from a group consisting of chitosan and sodium alginate in a phosphate buffered aqueous solution, said hydrogel ranging from about 5.0% to about 20.0% by weight of the aqueous carrier solution and said hydrogel component having a molecular weight ranging from ten thousand to three hundred thousand Daltons with a stable viscosity at a temperature ranging from about 22° C to about 37°C and said composition having a pH ranging from about 6.8 to about 7.4 and a growth factor additive added to said composition, said growth factor comprising one or more of a group consisting of transforming growth factor (TGF-beta), insulin growth factor (IGF-1); platlet derived growth factor (PDGF), vascular endothelial growth factor (VEGF), fibroblast growth factor (FGF) (numbers 1-23), osteopontin, growth hormones such as somatotropin cellular attractants and attachment agents.

22. A formable bone composition as claimed in claim 21 including a cellular material additive taken from a group consisting of living cells and cell elements such as chondrocytes, red blood cells, white blood cells, platelets, blood plasma, bone marrow cells, mesenchymal stem cells, pluripotential cells, osteoblasts, osteoclasts, and fibroblasts, epithelial cells, and endothelial cells. These cells or cell elements or combinations of the same are present at a concentration of 10^5 to 10^8 per cc of the carrier

23. A sterile malleable bone composition for application to a bone defect site to promote new bone growth at the site comprising demineralized osteoinductive and osteoconductive bone particles in an aqueous carrier solution, the bone particles being added to a viscous carrier at a concentration ranging from 5-50%(w/w), the carrier comprising a hydrogel taken from a group consisting of chitosan and sodium alginate in a phosphate buffered aqueous solution, said hydrogel ranging from about 5.0% to about 20.0% by weight of the aqueous carrier solution and cellular material taken from a group consisting of living cells, cell elements such as red blood cells, white blood cells, platelets, blood plasma, pluripotential cells, osteoblasts, osteoclasts, and fibroblasts, epithelial cells, and endothelial cells present at a concentration of 10^5 to 10^8 per cc of the carrier, said hydrogel component having a molecular weight ranging from ten thousand to three hundred thousand Daltons with a stable viscosity and said composition having a pH ranging from about 6.8 to about 7.4

24. A sterile formable bone composition as claimed in claim 23 including growth factor additive added to said composition, said growth factor comprising one or more of a group consisting of transforming growth factor (TGF-beta), insulin growth factor (IGF-1); platlet derived growth factor (PDGF), vascular endothelial growth factor (VEGF), fibroblast growth factor (FGF) (numbers 1-23), osteopontin, growth hormones such as somatotropin cellular attractants and attachment agents.

25. A sterile formable bone composition as claimed in claim 23 including growth factor additive added to said composition comprising one or more of a group consisting of fibroblast growth factor (FGF) (numbers 1-23) in the amount of 2-4 milligrams in 10cc of

carrier solution.